Computer Science, BS
Bachelor of Science, 2013-2014 Catalog Year
ESCSEBS

Notes: ** See CIDSE Advising Center or CIDSE Website (http://cidse.engineering.asu.edu/degreerequirementsbscs/) for approved technical electives and approved lab science sequence courses.
* Designates critical requirements for CS admits in the 2013-2014 academic year. Minimum 'C' grade required in all CSE courses.
+CSE 4XX courses require CSE 310 and/or 360 as prerequisites

Prerequisite
**Term 1**


**FSE 100: Introduction to Engineering** - Introduces the engineering design process; working in engineering teams; the profession of engineering; engineering models, written and oral technical communication skills.

**MAT 265: Calculus for Engineers I** - Limits and continuity, differential calculus of functions of one variable, introduction to integration. Not open to students with credit in MAT 270.

**ASU 101-CSE: The ASU Experience**

**ENG 101: First-Year Composition**

**HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences**

**Term 2**

**CSE 205: Object-Oriented Programming & Data Structures** - Problem solving by programming with an object-oriented programming language. Introduces data structures. Overview of computer science topics.

**MAT 266: Calculus for Engineers II** - Methods of integration, applications of calculus; elements of analytic geometry, improper integrals, Taylor series

**Lab Science Option:** choose from BIO, GLG, CHM or PHY

**General Elective:** *Elective cannot include CSE, MAT, PHY, BIO, CHM*

**Term 3**

**CSE 120: Digital Design Fundamentals** - Number systems, conversion methods, binary and complement arithmetic, Boolean algebra, circuit minimization, ROMs, PLAs, flipflops, synchronous sequential circuits

**MAT 243: Discrete Mathematical Structures** - Logic, sets, functions, elementary number theory and combinatorics, recursive algorithms, and mathematical reasoning, including induction. Emphasizes connections to computer science.

**MAT 267: Calculus for Engineers III** - Vector-valued functions of several variables, partial derivatives, multiple integration.

**Lab Science:** PHY 121 & 131 or CHM 113 & 116 or GLG 101 & 103 or BIO 181 & 182

**HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences**

**Term 4**


**CSE 240: Introduction to Programming Languages** - Introduces the procedural (C/C++), applicative (LISP/Scheme), and declarative (Prolog) languages.


**Lab Science:** complete sequence from above

**HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences**

**Term 5**

**CSE 301: Computing Ethics** - Ethics for computing majors: history of computing, intellectual property, privacy, ethical frameworks, professional ethical responsibilities, and risks of computer-based systems.

**CSE 310: Data Structures and Algorithms** - Advanced data structures and algorithms, including stacks, queues, trees (B, B+, AVL), and graphs. Searching for graphs, hashing, external sorting.

**CSE 360: Introduction to Software Engineering** - Software life cycle models; project management, team development environments and methodologies; software architectures; quality assurance and standards; legal, ethical issues

**IEE 380: Probability and Statistics for Engineering Problem Solving** - Applications-oriented course with computer-based experience using statistical software for formulating and solving engineering problems

**HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences**

**HU/SB: Upper Division Humanities, Fine Arts & Design or Social & Behavioral Sciences**

**Term 6**

**CSE 340: Principles of Programming Languages** - Formal syntactic and semantic descriptions, compilation and implementation issues, and theoretical foundations for several programming paradigms.

**CSE 355: Introduction to Theoretical Computer Science** - Introduces formal language theory and automata, Turing machines, decidability/undecidability, recursive function theory, and complexity theory.

**CSE 4** Elective

**Technical Elective:** Upper Division Elective

**HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences**

**Term 7**

**CSE 430: Operating Systems** - Operating system structure and services, processor scheduling, concurrent processes, synchronization techniques, memory management, virtual memory, input/output, storage management, and file systems.

**CSE 485: Computer Science Capstone Project I** - First course in capstone sequence for computer science majors emphasizing development process, technical skills, teamwork, and communication.

**CSE 4** Elective

**CSE 4** Elective

**General Elective (2 credit)**

**Term 8**

**CSE 486: Computer Science Capstone Project II** - Second course in capstone sequence for computer science majors continuing the development process, technical skills, teamwork, and communication.

**CSE 4** Elective

**CSE 4** Elective

**Technical Elective:** Upper Division Elective